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EXAMINER

LIANG, LEONARD S

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 08/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/016,054

Applicant(s)

NELSON ET AL.

Examiner

Leonard S Liang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 26-46 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15, 26-46 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The supplemental IDS filed on 05/06/03 is missing an IDS form. However, an European Search Report is included, and the art referenced by the search report has been received by the examiner. The examiner notes that two copies of Smith (US Pat 4734227) and Peeters et al (US Pat 6116718) have been submitted, though on the European Search Report, US Pat 6116718 is attributed to Lean Meng H et al and not Peeters et al. A IDS form corresponding to the supplemental IDS is required.

Drawings

2. Figures 4-5 are objected to because they have reference numbers 104 and 105 cut off from the page.

Claim Objections

3. Claims 4, 31 and 43 are objected to because of the following informalities:

Claim 4 discloses "The printhead... wherein the discharge device includes a first variable area section connected to one end of a first constant area section, and a second variable area section connected to an other end of the first constant area section..." This is not correct grammar. It will be construed that the claim should state "The printhead... wherein the discharge device includes a first variable area section connected to one end of a first constant area section, and a second variable area section connected to another end of the first constant area section..."

Claim 31 discloses "The printing apparatus according to Claim 50, wherein the discharge device includes a first variable area section connected to one end of a first constant area section,

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and a second variable area section connected to an other end of the first constant area section...”

First, there is no claim 50. Second, this is not correct grammar. It will be construed that the claim should state “The printing apparatus according to Claim 30, wherein the discharge device includes a first variable area section connected to one end of a first constant area section, and a second variable area section connected to another end of the first constant area section...”

Claim 43 discloses “The printing apparatus... wherein the position controllable actuating mechanism is positioned to the solenoid actuating mechanism.” However, there is no solenoid actuating mechanism mentioned in claim 40 or claim 11, from which claim 43 depends. It will be construed that the claim should state “The printing apparatus... wherein the position controllable actuating mechanism is positioned to a solenoid actuating mechanism.”

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 6, 10-12, 26-36, 39-40, and 44-46 rejected under 35 U.S.C. 103(a) as being unpatentable over Sievers et al (US Pat 5639441) in view of Coulter (US Pat 3457949).

Sievers et al discloses:

- {claim 1} A printhead for delivering a solvent free marking material to a receiver (fig 3, ref 52 ; column 4, lines 7-9); a discharge device having an inlet and an

outlet, a portion of the discharge device defining a delivery path, a portion of the discharge device being adapted to be releasably connected to a pressurized source of a thermodynamically stable mixture of a fluid and a marking material at the inlet, the discharge device being configured to produce a shaped beam of the marking material, the fluid being in a gaseous state at a location beyond the outlet of the discharge device (figure 1, reference 20, 22; column 11, lines 44-67; column 12, lines 15-36)

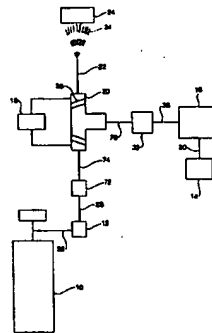


FIG. 1

- {claim 10} a predetermined amount of a marking material and a supercritical fluid in a thermodynamically stable mixture, wherein the canister is releasably connectable to a discharge device (figure 1, reference 20)
- {claim 11} A printing apparatus comprising a pressurized source of a thermodynamically stable mixture of a fluid and a marking material (figure 1); a printhead, portions of the printhead defining a delivery path, the delivery path of the printhead being connected to the pressurized source, the printhead including a discharge device, the discharge device having an outlet, a portion of the discharge device being positioned along the delivery path, the discharge device

being shaped to produce a shaped beam of the marking material, the fluid being in a gaseous state at a location beyond the outlet of the discharge device

- {claim 12} a receiver retaining device positioned a predetermined distance from the outlet of the discharge device (figure 1, reference 24)
- {claim 26} a source of fluid connected to the pressurized source (figure 1, reference 10, 14)
- {claim 27} a source of marking material connected to the pressurized source (figure 1, reference 14)
- {claim 28} the pressurized source includes an inlet adapted to receive the marking material (figure 1, reference 30)
- {claim 46} a receiver positioned on a surface of the receiver retaining device (figure 1, reference 24)

Sievers et al differs from the claimed invention in that it does not disclose:

- {claim 1} an actuating mechanism positioned along the delivery path, the actuating mechanism having a first position removed from the delivery path and a second position in the delivery path
- {claim 2} the discharge device includes a variable area section
- {claim 3} the discharge device includes a constant area section
- {claim 4} the discharge device includes a first variable area section connected to one end of a first constant area section, and a second variable area section connected to another end of the first constant area section

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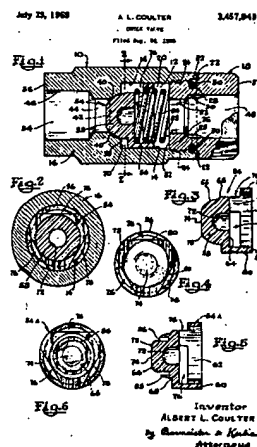
- {claim 6} the actuating mechanism includes a position controllable actuating mechanism
- {claim 11} an actuating mechanism positioned along the delivery path, the actuating mechanism having an open position at least partially removed from the delivery path
- {claim 29} the discharge device has a variable area section
- {claim 30} the discharge device includes a constant area section
- {claim 31} the discharge device includes a first variable area section connected to one end of a first constant area section, and a second variable area section connected to another end of the first constant area section
- {claim 32} a second constant area section connected to the second variable area section
- {claim 33} the second constant area section having a first predetermined diameter, the second variable area section having a second predetermined diameter, wherein the first predetermined diameter is substantially equal to the second predetermined diameter
- {claim 34} the second predetermined diameter is a maximum diameter of the second variable area section
- {claim 35} the first constant area section having a third predetermined diameter, the first variable area section having a fourth predetermined diameter, wherein the third predetermined diameter is substantially equal to the fourth predetermined diameter

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- {claim 36} the fourth predetermined diameter is a minimum diameter of the first variable area section
- {claim 39} the first constant area section having a predetermined length, wherein the length of the first constant area section is from about 0.1 to about 10 times the diameter of the first constant area section
- {claim 40} the actuating mechanism includes a position controllable actuating mechanism
- {claim 44} the actuating mechanism includes a conical sealing element moveable between the open position and a closed position
- {claim 45} the actuating mechanism includes a discloses shaped sealing element moveable between the open position and a closed position

Coulter discloses

- {claim 1} an actuating mechanism positioned along the delivery path, the actuating mechanism having a first position removed from the delivery path and a second position in the delivery path (figure 1 reference 54)



- {claim 2} the discharge device includes a variable area section (figure 1, reference 40)
- {claim 3} the discharge device includes a constant area section (figure 1, drawn in)
- {claim 4} the discharge device includes a first variable area section connected to one end of a first constant area section, and a second variable area section connected to another end of the first constant area section (figure 1, reference 40; column 1-6)
- {claim 6} the actuating mechanism includes a position controllable actuating mechanism (figure 1; column 1, lines 12-44)
- {claim 11} an actuating mechanism positioned along the delivery path, the actuating mechanism having an open position at least partially removed from the delivery path (figure 1; column 1, lines 12-44)
- {claim 29} the discharge device has a variable area section (figure 1, reference 40)
- {claim 30} the discharge device includes a constant area section (figure 1; drawn in)
- {claim 31} the discharge device includes a first variable area section connected to one end of a first constant area section, and a second variable area section connected to another end of the first constant area section (figure 1, reference 40; column 1-6)

- {claim 32} a second constant area section connected to the second variable area section (figure 1; drawn in)
- {claim 33} the second constant area section having a first predetermined diameter, the second variable area section having a second predetermined diameter, wherein the first predetermined diameter is substantially equal to the second predetermined diameter (figure 1, reference 40; drawn in second constant area)
- {claim 34} the second predetermined diameter is a maximum diameter of the second variable area section (figure 1, reference 40)
- {claim 35} the first constant area section having a third predetermined diameter, the first variable area section having a fourth predetermined diameter, wherein the third predetermined diameter is substantially equal to the fourth predetermined diameter (figure 1, reference 40; drawn in first constant area)
- {claim 36} the fourth predetermined diameter is a minimum diameter of the first variable area section (figure 1, reference 40; segment both minimum and maximum diameter)
- {claim 39} the first constant area section having a predetermined length, wherein the length of the first constant area section is from about 0.1 to about 10 times the diameter of the first constant area section (figure 1)
- {claim 40} the actuating mechanism includes a position controllable actuating mechanism (figure 1; column 1, lines 12-44)

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- {claim 44} the actuating mechanism includes a conical sealing element moveable between the open position and a closed position (figure 1, reference 54)
- {claim 45} the actuating mechanism includes a discloses shaped sealing element moveable between the open position and a closed position (figure 2)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Coulter into the invention of Seivers et al. The motivation for the skilled artisan in doing so is to gain the benefit of providing a valve which controls the flow of the marking material.

5. Claims 5 and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sievers et al (US Pat 5639441) in view of Coulter (US Pat 3457949), as applied to claims 1-4, 6, 10-12, 26-36, 39-40, and 44-46, and further in view of Matsumoto et al (US at 5949456).

Sievers et al, as modified, teaches all limitations of the claimed limitation except for the following:

- {claims 5 and 37} the diameter of the first constant area section is from about 20 microns to 2,000 microns
- {claim 38} the diameter of the first constant area section is from about 10 microns to about 20 microns

Matsumoto et al discloses:

- {claims 5 and 37} the diameter of the first constant area section is from about 20 microns to 2,000 microns (column 5, lines 24-25)

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- {claim 38} the diameter of the first constant area section is from about 10 microns to about 20 microns (column 5, lines 24-25)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Matsumoto et al into the invention of modified Sievers et al. The motivation for the skilled artisan in doing so is to gain the benefit of having dimensions adequate for proper discharging and proper sealing when the need arises.

6. Claims 7-8, and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sievers et al (US Pat 5639441) in view of Coulter (US Pat 3457949), as applied to claims 1-4, 6, 10-12, 26-36, 39-40, and 44-46, and further in view of Shrivastava et al (US Pat 5461401).

Sievers et al, as modified, teaches all limitations of the claimed limitation except for the following:

- {claims 7 and 41} the actuating mechanism includes a solenoid actuating mechanism
- {claims 8 and 42} the solenoid actuating mechanism is actuatable at a plurality of frequencies

Shrivastava et al discloses:

- {claims 7 and 41} the actuating mechanism includes a solenoid actuating mechanism (solenoid valve; abstract; column 1, lines 48-58)
- {claims 8 and 42} the solenoid actuating mechanism is actuatable at a plurality of frequencies (abstract; column 1, lines 48-58)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Shrivastava et al into the invention of modified Sievers et al. The motivation for the skilled artisan in doing so is to gain the benefit of providing a valve which can regulate the flow of material being discharged through the nozzles and allowing the valve system to obtain higher operating frequencies (abstract).

7. Claims 9 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sievers et al (US Pat 5639441) in view of Coulter (US Pat 3457949), as applied to claims 1-4, 6, 10-12, 26-36, 39-40, and 44-46, and further in view of Ishikawa et al (US Pat 4739347).

Sievers et al, as modified, teaches all limitations of the claimed limitation except for the following:

- {claims 9 and 43} the position controlling actuating mechanism is positioned adjacent to a solenoid actuating mechanism

Ishikawa et al discloses:

- {claims 9 and 43} the position controlling actuating mechanism is positioned adjacent to a solenoid actuating mechanism (column 3, lines 60-68; column 4)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Ishikawa et al into the invention of modified Sievers et al. The motivation for the skilled artisan in doing so is to gain the benefit of providing a valve to moderate flow control.

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8. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sievers et al (US Pat 5639441) in view of Coulter (US Pat 3457949), as applied to claims 1-4, 6, 10-12, 26-36, 39-40, and 44-46, and further in view of Wang (US Pat 6145980).

Sievers et al further teaches the printhead is rigidly connected to the pressurized source such that the printhead is stationary (figure 1, reference 22).

Sievers et al, as modified, differs from the claimed invention in that it does not disclose:

- {claim 13} the receiver retaining device being moveably positioned relative to the printhead
- {claim 14} the receiver retaining device is moveable in a first direction and a second direction relative to the printhead
- {claim 15} the second direction is substantially perpendicular to the first direction

Wang discloses:

- {claim 13} the receiver retaining device being moveably positioned relative to the printhead (column 1, lines 60-64; column 3, lines 26-27)
- {claim 14} the receiver retaining device is moveable in a first direction and a second direction relative to the printhead (column 1 lines 60-64; column 3, lines 26-27)
- {claim 15} the second direction is substantially perpendicular to the first direction (column 1, lines 60-64; column 3, lines 26-27)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Wang into the invention of modified Sievers et al. The motivation for the skilled artisan in doing so is to gain the benefit of not needing the

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complex machine structure of a printhead carriage in order to perform marking on a recording media.


Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard S Liang whose telephone number is (703) 305-4754. The examiner can normally be reached on 8:30-5 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (703) 308-4896. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

lsl LSL
August 9, 2003


Stephen D. Meier
Primary Examiner